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| 10/790,441 | 03/01/2004 | Alan Flum | 488-191 | 9790 |

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| EXAMINER | |
|---|---|
| YAM, STEPHEN K | |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/790,441 | FLUM ET AL. | |
| | Examiner | Art Unit | |
| | STEPHEN YAM | 2878 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *30 January 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1,2,4-15 and 17-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-15 and 17-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

This action is in response to Amendments and remarks filed on January 30, 2008. Claims 1, 2, 4-15, and 17-19 are currently pending.

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 4, and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Leviton US 5,965,879.

Regarding Claim 1, Leviton teaches (see Fig. 1, 8) a controller comprising: a rotatable platter (303) joumaled for rotation (see Col. 5, lines 57-59), said rotatable platter including a circumferential skirt (303); an optical system comprising a lens (13), an image sensor (17), a light source (11) and a signal processor (23) responsive to said rotatable platter; said optical system being positioned to optically acquire sequential images from said circumferential skirt and determine the direction and magnitude of movement (since position is continuously detected- see Col. 1, lines 38-39, and also since incremental displacement is detected- see Col. 5, lines 38-50); and said optical system including an output responsive to said rotatable platter (output position information).

Regarding Claim 2, Leviton teaches said circumferential skirt includes a textured pattern (see Fig. 8 and 9) whereby said optical system acquires sequential surface images of said textured pattern (to determine change/incremental position).

Regarding Claim 4, Leviton teaches said optical system is responsive to rotational position of said rotatable platter (see Col. 2, lines 4-5).

Regarding Claim 5, Leviton teaches said optical system is responsive to rotational position of said rotatable platter.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 4 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leviton.

Regarding Claim 4, Leviton teaches the device in Claim 1, according to the appropriate paragraph above. Leviton also teaches continuously determining a position of the rotational platter (see Col. 1, lines 39-40 and Col. 2, lines 4-5). Leviton does not teach the optical system responsive to rotational velocity of the rotational platter. It is well known in the art to configure an optical encoder to output a sensing value for both position and velocity, as velocity is merely a displacement over a given time period and is easily calculated from the sensed data using simple arithmetic (distance/time). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the optical system responsive to rotational velocity

of the rotational platter, in the device of Leviton, to provide common optical encoder functionality and abilities in the device for improved versatility in commercial devices.

Regarding Claim 18, Leviton teaches the device in Claim 1, according to the appropriate paragraph above. Leviton does not teach said light source is a light emitting diode (LED). It is well known in the art to use an LED as a light source within an optical system, to provide faster response to a light activation signal, longer component lifetime, reduced power usage, and more consistent light output. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the light source as an LED, in the device of Leviton, to provide improved operation of the device and optical performance while providing lower power consumption.

5. Claims 6-15, 17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leviton in view of Hinckley et al. US 6,844,871.

Regarding Claim 17, Leviton teaches the device in Claim 1, according to the appropriate paragraph above. Leviton does not teach said rotatable platter has at least one degree of freedom of movement in addition to rotation, an extent of movement of said at least one degree of freedom of movement being determined by said optical system optically acquiring sequential images from said circumferential skirt. Hinckley et al. teach a similar device with determining various freedom of movements based on acquiring sequential images (see Col. 7, lines 49-59) of a textured pattern (see Fig. 28-32) including rotational movement (see Fig. 23 and Col. 11, lines 33-47) and at least one degree of freedom of movement (tilt) (see Fig. 13, 16) in addition to rotation, an extent of movement of said at least one degree of freedom of movement being

determined by said optical system optically acquiring sequential images (see Col. 10, line 48 to Col. 11, line 12). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide said rotatable platter having at least one degree of freedom of movement in addition to rotation, an extent of movement of said at least one degree of freedom of movement being determined by said optical system optically acquiring sequential images from said circumferential skirt, as taught by Hinckley et al., in the device of Leviton, to provide improved sensing of the positional status of the rotatable platter for greater versatility of sensing.

Regarding Claim 6, Leviton in view of Hinckley et al. teach the device in Claim 17, according to the appropriate paragraph above. Leviton does not teach said at least one degree of freedom of movement comprises one and only one degree of freedom of movement. It is well known in the art to limit the functionality of a device to certain sub-sections, to save on costs of the device when the functionality is not required in a specific application. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide said at least one degree of freedom of movement comprises one and only one degree of freedom of movement, in the device of Leviton in view of Hinckley et al., to provide a lower cost device capable of more limited degrees of freedom of sensing for the lower-end sensor market.

Regarding Claim 7, Leviton in view of Hinckley et al. teach said one degree of freedom comprises tilting of said rotatable platter (see Hinckley et al., Fig. 13, 16 and Col. 10, line 48 to Col. 11, line 12).

Regarding Claim 8, Leviton in view of Hinckley et al. teach said optical system is responsive to tilting movement of said rotatable platter (see Hinckley et al., Fig. 13, 16 and Col. 10, line 48 to Col. 11, line 12).

Regarding Claim 11, Leviton in view of Hinckley et al. teach said at least one degree of freedom of movement comprises two degrees of freedom of movement (left-right and front-back tilts) (see Hinckley et al., Fig. 13, 16, and Col. 10, lines 48-50).

Regarding Claim 12, Leviton in view of Hinckley et al. teach said two degrees of freedom comprise tilting of said rotatable platter in directions orthogonal to each other (left-right and front-back tilts) (see Hinckley et al., Fig. 13, 16, and Col. 10, lines 48-50).

Regarding Claim 13, Leviton in view of Hinckley et al. teach said optical system is responsive to tilting movement of said rotatable platter (see Hinckley et al., Fig. 13, 16, and Col. 10, lines 48-50).

Regarding Claims 9 and 14, Leviton in view of Hinckley et al. teach the device in Claim 7, according to the appropriate paragraph above. Leviton in view of Hinckley et al. teach said optical system is responsive to tilting position of said rotatable platter (see Hinckley et al., Fig. 13, 16, and Col. 2, lines 13-23 and Col. 10, line 48 to Col. 11, line 12). Leviton does not teach the optical system responsive to tilting velocity of the rotational platter. It is well known in the art to configure an optical encoder to output a sensing value for both position and velocity, as velocity is merely a displacement over a given time period and is easily calculated from the sensed data using simple arithmetic (distance/time). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the optical system responsive to tilting velocity of the rotational platter, in the device of Leviton, to provide common optical encoder functionality and abilities in the device for improved versatility in commercial devices.

Regarding Claims 10 and 15, Leviton in view of Hinckley et al. teach said optical system is responsive to tilting position of said rotatable platter (see Hinckley et al., Fig. 13, 16, and Col. 2, lines 13-23 and Col. 10, line 48 to Col. 11, line 12).

Regarding Claim 19, Leviton teaches the device in Claim 1, according to the appropriate paragraph above. Leviton does not teach the optical system as an optical navigation system. Hinckley et al. teach a similar device with the optical system as an optical navigation system (see Fig. 28-32). it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the optical system as an optical navigation system, as taught by Hinckley et al., in the device of Leviton, to provide improved sensing of different displacement vectors and freedoms of movement.

### *Response to Arguments*

6. Applicant's arguments with respect to claims 1, 2, 4-15, and 17-19 have been considered but are moot in view of the new ground(s) of rejection.

### *Conclusion*

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Leviton US 7,060,968 and Gordon-Ingram US 6,603,115 teach similar optical systems.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEPHEN YAM whose telephone number is (571)272-2449. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (571)272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Stephen Yam/
Primary Examiner, Art Unit 2878